Computer Vision, Graphics, and Image Processing

EDITORS
Linda G. Shapiro
Norman Badler
Herbert Freeman
Thomas S. Huang
Azriel Rosenfeld

AN INTERNATIONAL JOURNAL

VOLUME 34, 1986

ACADEMIC PRESS, INC.
Harcourt Brace Jovanovich, Publishers
San Diego Orlando New York Austin Boston
London Sydney Tokyo Toronto

Copyright © 1986 by Academic Press, Inc.
All rights reserved

No part of this publication may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopy, recording, or any information storage and retrieval system, without permission in writing from the copyright owner.

The appearance of the code at the bottom of the first page of an article in this journal indicates the copyright owner's consent that copies of the article may be made for personal or internal use, or for the personal or internal use of specific clients. This consent is given on the condition, however, that the copier pay the stated per copy fee through the Copyright Clearance Center, Inc. (27 Congress Street, Salem, Massachusetts 01970), for copying beyond that permitted by Sections 107 or 108 of the U.S. Copyright Law. This consent does not extend to other kinds of copying, such as copying for general distribution, for advertising or promotional purposes, for creating new collective works, or for resale. Copy fees for pre-1986 articles are as shown on the article title pages; if no fee code appears on the title page, the copy fee is the same as for current articles.

0734-189X/86 $3.00

MADE IN THE UNITED STATES OF AMERICA

CONTENTS OF VOLUME 34

NUMBER 1, APRIL 1986

D. T. LEE AND A. K. LIN. Computing the Visibility Polygon from an Edge 1

FU-NIAN KU AND JIAN-MIN HU. A New Approach to the Restoration of an Image Blurred by a Linear Uniform Motion 20

THOMAS OTTMANN AND DERICK WOOD. Space-Economical Plane-Sweep Algorithms 35

CHARLES F. NEVEU, CHARLES R. DYER, AND ROLAND T. CHIN. Two-Dimensional Object Recognition Using Multiresolution Models 52

KEITH E. PRICE. Hierarchical Matching Using Relaxation 66

ANGELA Y. WU, S. K. BHASKAR, AND AZRIEL ROSENFELD. Computation of Geometric Properties from the Medial Axis Transform in $O(n \log n)$ Time 76

NOTE

H. B. BIDASARIA. A Method for Almost Exact Histogram Matching for Two Digitized Images 93

DIALOG

AZRIEL ROSENFELD. "Expert" Vision Systems: Some Issues 99

JOHN R. KENDER. Vision Expert Systems Demand Challenging Expert Interactions 102

MAKOTO NAGAO. Comment on the Position Paper "Expert Vision Systems" . . . 104

LEONARD UHR. Workshop on Goal-Directed "Expert" Vision Systems: My Positions and Comments 105

WILLIAM B. THOMPSON. Comments on: "Expert" Vision Systems: Some Issues . . 109

V. A. KOVALEVSKY. Dialog on "Expert" Vision Systems: Comments 111

DAVID SHER. Expert Systems for Vision Based on Bayes' Rule 114

S. TANIMOTO. The Case for Appropriate Architecture 116

AZRIEL ROSENFELD. Rosenfeld's Concluding Remarks 117

BOOK REVIEW

ROBERT M. HARALICK. *Robot Vision* by Berthold Horn 118

BOOKS RECEIVED FOR REVIEW 120

ANNOUNCEMENT 121

ABSTRACTS OF PAPERS ACCEPTED FOR PUBLICATION 122

NUMBER 2, MAY 1986

SAUL YOUSSEF. A New Algorithm for Object Oriented Ray Tracing 125

STUART A. FRIEDBERG. Finding Axes of Skewed Symmetry 138

PETER G. SELFRIDGE. Locating Neuron Boundaries in Electron Micrograph Images Using "Primal Sketch" Primitives 138

JOHAN D'HAEYER. Determining Motion of Image Curves from Local Pattern Changes 166

NARENDRA AHUJA. Efficient Planar Embedding of Trees for VLSI Layouts 189

SURVEY

AZRIEL ROSENFELD. Picture Processing: 1985 204

BOOKS RECEIVED FOR REVIEW 252

ANNOUNCEMENT 253

ABSTRACTS OF PAPERS ACCEPTED FOR PUBLICATION 254

NUMBER 3, JUNE 1986

J. KITTLER AND J. FÖGLEIN. On Compatibility and Support Functions in Probabilistic Relaxation 257

FUSAK CHEEVASUVIT, HENRI MAITRE, AND DANIEL VIDAL-MADJAR. A Robust Method for Picture Segmentation Based on Split-and-Merge Procedure 268

JUN MA, CHENG-KE WU, AND XIN-RU LU. A Fast Shape Descriptor 282

L. M. CHENG, A. S. HO, AND R. E. BURGE. An Adaptive Asteroid Zonal Filter for Data Compression 292

H. WESTPHAL AND H.-.H NAGEL. Toward the Derivation of Three-Dimensional Descriptions from Image Sequences for Nonconvex Moving Objects 302

MUBARAK SHAH, ARUN SOOD, AND RAMESH JAIN. Pulse and Staircase Edge Models . . 321

GUNILLA BORGEFORS. Distance Transformations in Digital Images 344

NOTE

ROBERT M. HARALICK AND XINHUA ZHUANG. A Note on "Rigid Body Motion from Depth and Optical Flow" 372

ABSTRACTS OF PAPERS ACCEPTED FOR PUBLICATION 388

AUTHOR INDEX FOR VOLUME 34 390